

Leeper Ford Bridge  
Spanning Big Sac River on Farm Road 34,  
3.0 miles south of Greene/Polk County Line  
and 2.0 miles west of State Route V  
Ash Grove vicinity  
Greene County  
Missouri

HAER No. MO-62

HAER  
MO,  
39-ASGRO.V,  
2-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
Rocky Mountain Regional Office  
National Park Service  
U.S. Department of the Interior  
P.O. Box 25287  
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

Leeper Ford Bridge

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Location: Spanning Big Sac River on Farm Road 34, 3.0 miles south of Green/Polk County  
Line and 2.0 miles west of State Route V  
Ash Grove vicinity, Greene County, Missouri

UTM: 15.445500E/4137440N - Eastern End  
15.445460E/4137440N - Western End  
Quad: Walnut Grove

Date of Construction: 1930

Builder: Greene County, Missouri

Present Owner: Greene County  
Greene County Courthouse  
Springfield, Missouri

Present Use: Vehicular bridge (to be replaced by a new vehicular bridge.)  
Projected date of removal: Summer 1990

Significance: Pratt through truss bridge constructed of recycled steel.

Historian: Kerry C. McGrath  
Center for Archaeological Research  
Southwest Missouri State University  
April 1990

## I. HISTORY

### A. The Good Roads Movement: 1910-1930

For Missourians, the establishment of rural free delivery and introduction of the automobile, particularly Ford's inexpensive Model T, spurred interest in road improvement, since effective functioning of both was contingent on a highway network that was passable in all seasons. [1] With the meteoric rise in automobile ownership between 1910 and 1930 (registered vehicles in Missouri: 1911 - 16,387; 1920 - 297,008; 1930 - 763,375), demand for improved roads intensified [2] and was reflected in the appearance of various organizations devoted to "lifting Missouri out of the mud" through construction of all-weather roads. [3]

The statewide response was passage in 1917 of the Hawes Act, creating the State Highway Commission [4] and marking the first steps toward centralized planning and control over the state's roads. Subsequently, in 1920-1921, a bond issue was passed and the legislature enacted the Centennial Road Act. These empowered the State Highway Commission to develop plans for a network of roads connecting county seats and provided funding for their design and construction. [5] Then, in 1927, the needs of rural areas were addressed with the approval of a second bond issue to underwrite construction of farm-to-market roads--well engineered, graveled highways through sections not reached by the primary system. [6] By 1930, 4,400 miles of improved road had been added to the state highway system, gas taxes and license fees were generating an annual return of eighteen million dollars for the state's Good Road fund. [7]

Improvement of county highways moved at a slower pace. In rural areas, railroads were still viewed as the primary vehicle for commercial traffic and long distance travel. County roads were essentially planned and designed by local residents and entered the public domain through a petition process. While professional contractors might be used for bridge construction, road work generally was done by road district residents with animal-drawn equipment and simply entailed blading off top soil to expose the cherty subsoil. With use, these cherty roadbeds would pack and form all-weather surfaces but they eroded quickly and the rough surfaces were particularly hard on automobiles. [8]

Spurred perhaps by the continued growth of the city of Springfield [9], the county seat and regional trade and industrial center. Greene County had started to modernize its highway system during the 1920s. The process entailed using new equipment and technology. Court records for the decade, particularly warrant issued, document the purchase and use of motorized equipment for road work and suggest an increased expenditure of time and revenue for grading roads and applying crushed gravel surfaces, excavation and maintenance of ditches, and installation of concrete culverts. [10]

Although bridges were an integral part of Greene County's transportation system, there was a marked drop in their construction during the 1920s. The county had built over thirty-eight bridges between 1910 and 1919 [11] but erected only ten between 1920 and 1929. [12] Since the 1880s, Greene county had been erecting bridges on major intra-regional, commercial thoroughfares and principal farm to market roads; thus, by the 1920s, most of the major fords on heavily used county roads had been bridged. [13] Seemingly by the 1920s, building and maintaining all-weather roads to the county's larger towns and the city of Springfield took precedence over placing bridges on roads in outlying rural districts. Finally, the cost of modernizing the extant system probably resulted in decreased funds for new bridge construction.

By 1930, in northwestern Greene County, there was keen local interest in highway improvement. The activities of the state highway department were followed closely, particularly since there would be a substantial increase in road construction that year and work would start on the farm to market supplementary road system. [14] Good roads meant increased income for area merchants in Ash Grove and Walnut Grove and for local farmers. Profitable farming was dependent upon good highway transportation, because it provided fast and inexpensive shipment of products. [15] As the Ash Grove newspaper, The Commonwealth, stressed, the key ingredient was an "all weather" highway system, since most of the nation's and, by implication, the county's farmers still were cut off from markets during much of the year due to impassable roads. [16]

The Commonwealth's perspective was shared by area residents. At the beginning of 1930, in the face of impending economic depression, they had strongly supported a tax levy that would allow for continued road construction. [17] Later that spring, local road advocates had met with the County Court and other "road boosters" to garner their support for a good roads program. [18] To insure that highway improvement continued, they were willing to subsidize the work themselves. For example, the county road which gave the Pleasant Hill neighborhood, west of Ash Grove, access to Highway 12 was constructed primarily with private donations. [19] This was not unique. During the 1920s, throughout southwest Missouri, private citizens had contributed toward county road and bridge projects. [20]

Although not identified as a critical factor in Missouri's efforts to modernize its roads during the 1920s and 1930s, one suspects that donated land, labor, and funds were vital, especially for counties that often lacked the means to underwrite wholesale improvement of their transportation networks. [21] This seems to have been the case in 1930 for Greene County. Throughout the year, the county had paid for materials and services used in road construction and maintenance. [22] However, a combination of private effort and public funds were used for bridge projects. That year, the county built only three steel bridges--at Gregory Crossing on Clear Creek, Eulah Cotter Ford on the Sac River, and Leeper Ford on the Big Sac River. In each case, the county committed itself to constructing and maintaining the bridges, while the other parties, generally local residents, were responsible for preparing the site, e.g., making necessary cuts or fills and providing gravel for the piers. Moreover, the contracts stipulated that if the necessary preparations were not done by the second parties, they would provide the funding for the county to do the work. [23]

Costs were further reduced by recycling, either using old steel or moving an extant bridge to the new location. [24] Perhaps the most notable illustration of this practice in southwest Missouri was the reuse of spans from the 1911 steel bridge at Galena, Stone County. State highway construction in 1927 relocated the river crossing to the Y Bridge on Highways 43 and 44. [25] Rather than discard the steel bridge, in 1929 the spans were moved and installed on county roads at the Hootentown and Jamestown fords. [26]

While the bridge at Gregory Crossing may have been a new structure, given the cost (\$1,309.35) of the project, this endeavor, unlike the other two, seems to have been done entirely with private funds. [27] The other two 1930 Greene County bridge projects apparently entailed some form of recycling. The Eulah Cotter Ford project (\$500.00) involved a road relocation; consequently the old bridge was simply moved to the new location. [28]

The Leeper Ford Bridge seems to have been assembled from recycled steel. This is indicated by the endposts and portal bracing, which are late nineteenth century in design, and the relative age of the channels used in the vertical compression members. [29] The channels were fabricated by the Phoenix Iron Company, a firm which reportedly went out of business circa 1901. [30] Moreover, metal for the 110-foot Leeper Ford Bridge, a Pratt through truss, cost only \$448.00. [31] This was a comparatively modest amount, when one considers that in 1926 the county had spent twice that amount (\$860.00) purchasing steel for a single span, 50-foot-long, Pratt pony truss. [32]

The metal for the Leeper Ford Bridge was purchased from Ed. W. Appleby and shipped to Ash Grove. [33] Appleby had been the county's primary bridge contractor for over a decade, and it is likely that his firm, the Kansas City-based Pioneer Construction Company, served as supplier, since the company was involved in all phases of road and bridge construction, including purchase and sale of materials. [34] In summary, the design and relative age of structural elements in the bridge, as well as the cost of the metal and the source from which it was purchased, points to a scenario involving assembling the bridge from used or recycled parts.

Construction of the Leeper Ford Bridge illustrates one-way rural areas coped with modernizing transportation. Community effort came into play in its construction with local residents underwriting much of the project. The bridge itself is an example of successful recycling--a procedure used by county governments to stretch limited budgets, so as to meet the demand for all-weather, improved highways.

#### B. Construction Chronology

The groundwork for the bridge project was laid in 1925, with the opening of a new east-west county road (Farm Road 34) along the line separating Sections 29, 30, 31 and 32 in Township 31 North, Range 24 West. The previous year (1924), residents of Walnut Grove Township had presented the Greene County court with a petition for the road. [35] Although the project had local support, there was some resistance, and this apparently delayed approval and opening of the road. [36] When finally approved in June 1925, supporters (James P. Leeper, J. W. Gant, George Leeper, J. T. Bray, G. F. Coble, and J. F. Degraffenreid) donated right-of-way, while the sole opponent along the road, a J. K. Miller, was awarded \$65.00 for damages. [37] Construction of the "Degraffenreid" Road may not have been completed until after 1927, since it is not shown on the Greene County platbook published that year. [38]

A chronic problem affecting rural traffic throughout the region was periodic flooding which made fords impassable and necessitated use of lengthy detours. [39] Consequently, in August 1925, shortly after the "Degraffenreid" (Farm Road 34) was dedicated, a delegation from the area attempted to get the county to build a bridge across the Big Sac at Chestnut Ford, located five miles northwest of Ash Grove. [40] At the time, the Big Sac River was crossed by two Greene County roads. The fords were situated about a half mile and a mile, respectively, south of Leeper Ford in Section 31, Township 31 North, Range 24 West. [41] Chestnut Ford apparently was one of these two river crossings. The proposed bridge would have accommodated east-west traffic during times of high water and its impending construction probably was one reason no effort was made at the time to bridge Leeper Ford. Another factor would have been delays in constructing the county road to Leeper Ford.

Although The Commonwealth reported that the court authorized construction of the Chestnut Ford Bridge, this was not reflected in court records, which make no reference to the project. [42] It is likely that approval was given informally and then the project was shelved; for five years had passed before the county built a bridge across the Sac in that area. This was the Leeper Ford Bridge which was authorized in December 1929, and duly noted in The Commonwealth:

"The county court, Wednesday of last week, made an order that a bridge be built across the Sac River, west of McBee School House. It is said that the bridge is badly needed, as the stream at this point cannot be crossed except at low stage." [43]

Again, the court record does not document their action on the project [44]; but, clearly, the bridge was to be built. Three months later, on March 17, 1930, the county purchased steel for the bridge. According to the warrant presented by Ed. W. Appleby, the \$448.00 was for "metal delivered F.O.B. Ash Grove for the Leeper Bridge at McBee School House and Dade County Road." [45] Next, on March 19, 1930, the court approved the construction contract between the county and nine individuals (J. F. Hagerman, W. W. Underwood, R. E. Simmons, G. F. Coble, W. L. Claypool, A. W. Harp, C. H. Harp, Elderidge Leeper, George T. Leeper), most of whom lived in the immediate vicinity of Leeper Ford. [46] While the court agreed to construct and maintain a 120-foot steel bridge over the Sac at Leeper Ford, the nine co-signers were obligated to make fills and cuts, as well as furnish gravel for building the piers. If the co-signers failed to do this, they were to pay the county \$325.00, the estimated cost for that phase of the project. [47]

Several factors make tracking the project difficult. Site preparation was undertaken by the co-signers and thus was not documented by warrants. Earlier in March, the court had entered into a similar contract for construction of the Gregory Crossing Bridge over Clear Creek [48], a project which may have run concurrently with the Leeper Ford Bridge construction. Throughout the spring, numerous warrants were approved for road and bridge work. These specify the type of services or materials purchased but generally do not give locational information. [49] Finally, the names of several Greene County metal and concrete bridges commemorated the Leeper family. [50] One, a truss bridge situated two and a half miles south of Ash Grove, was repaired during the spring of 1930. [51]

Construction of the Leeper Ford Bridge took place during the spring and early summer of 1930. In April, the court paid Marion Manning for work as a helper in hauling a bridge. [52] Since the hauling apparently involved an assembled structure rather than the parts, this probably was the Gregory Crossing Bridge. Indirect evidence suggests that bridge superstructures were assembled and/or in place by May 1930, when the county purchased \$45.28 of paint for bridges. [53] The deck of the Leeper Bridge was installed in the early summer, as indicated by a June payment of \$112.00 to the Walnut Grove Lumber Company for "bridge lumber for the Leeper Bridge." [54] In view of the fact that the county had just purchased lumber to repair the Leeper Bridge south of Ash Grove [55], this material must have been for the bridge at Leeper Ford.

When finished, the completed bridge was ten feet shorter than the length indicated in the construction contract. Although the sum of \$885.00 covers only the price of the metal, site preparation, and lumber for the deck, it is indicative of the lowered cost of bridge construction when recycled materials were used and public contributions of time, labor, and materials augmented the County Road and Bridge Fund.

### C. Location

Until the "Degraffenreid Road" was constructed in the late 1920s, there was no public access to Leeper Ford. In the 1870s, the ford lay within James Leeper's sizeable (760 acres) Big Sac Valley farm, included continuous holdings in Section 6, Township 30 North, Range 24 West and Sections 30 and 31, Township 31 North, Range 24 West. [56] No public roads crossed the property. By 1904, the farm was reduced to 480 acres in Sections 30 and 31, Township 31 North, Range 24 West [57] and was crossed by two public roads. [58] One was aligned north-south on the east side of the Big Sac River and went through the middle of Sections 30 and 31. This north-south road intersected an east-west road that passed through the southern part of the farm in Section 31 and crossed the Big Sac River about one-half mile south of Leeper Ford.

During the ensuing period, the Leeper property was subdivided into several smaller tracts. [59] By the 1920s, Leeper's son, James P., owned only 160 acres of the original farm. Elderidge Leeper, a distant relative, had purchased 160 acres containing the ford and the acreage to the east of the ford was owned by J. F. Degraffenreid. According to a 1927 platbook, no new county roads had been built in the vicinity of Leeper Ford since 1904 and those present followed their turn-of-the-century alignments. [60] The "Degraffenreid Road" does not appear on the plat, possible due to errors in compilation or because construction had not been completed. In effect, although elements of the Leeper Ford bridge were fabricated prior to 1901, the county road to the ford was not built until after 1925 and the ford was not bridged until 1930.

Contemporary accounts associate the Leeper Ford Bridge with the McBee School. [61] Since the late nineteenth century, a school had been present east of Leeper Ford in Section 29, Township 31 North, Range 24 West. In the 1870s, the school lay in the northeast quarter of Section 29 on George W. Claypool's farm. [62] by 1904, the school's location had changed to the southeast quarter of Section 29. [63] Construction of the "Degraffenreid Road" placed the school at the road's intersection with another county road, about 0.75 miles due east of Leeper Ford. However, few of those within the school district had to cross the river to attend school. The Leeper Ford Bridge is less than a half mile east of the Dade-Greene County line and only a narrow strip of land lies between the Big Sac River and Greene County's western boundary with Dade County. Moreover, as the 1927 platbook indicates, there were only a few Greene County farms on the west side of the river. [64]

Two Greene County towns -- Walnut Grove, about 4.5 miles to the northeast of Leeper Ford, and Ash Grove, some 5.5 miles southeast -- were the nearest service centers and railroad shipping points for those living in the area. While the bridge would have facilitated travel from northeastern Dade County to these two towns, two extant bridges were already serving commercial traffic. One was the bridge at Comet, built by Dade County in 1903 [65] and located in Section 25, Township 25 North, Range 25 West, about a mile and a half northwest of the Leeper Ford Bridge. The Comet Bridge gave the residents of Dade County access to both towns. The other bridge, built by Greene County in 1894, lay 4 miles to the south (Section 18, Township 30 North, Range 24 West) and served those traveling to Ash Grove. [66]

Circumstantial evidence suggests that selections of Leeper Ford for the bridge site was based in part on the needs of those residing in the area as well as their willingness to subsidize the project. Of those who co-signed the bridge construction contract with the county, Elderidge Leeper derived the greatest benefit from the bridge, since his farm was bisected by the Big Sac River. [67] Other co-signers, G. F. Coble, W. L. Claypool, R. E. Simmons, A. W. and C. H. Harp, lived in the immediate

vicinity on the east side of the Big Sac River. [68] While they did not need the bridge for access to markets, it may have enhanced their travel to scattered tracts of farmland. Frequently, area residents rented or owned land in both Greene and Dade counties, a pattern which continues today. For example, Willis Leeper, Elderidge's son and present owner of the farm, lives in Dade County but farms his Greene County land as well [69], necessitating travel across the river.

Several co-signers of the bridge construction contract (J. F. Hagerman, W. W. Underwood, G. F. Coble, W. L. Claywood, Elderidge and George Leeper [70]) were associated with families who had come to northwestern Greene County during the nineteenth century. George and Elderidge Leeper were descendants of Hugh Leeper, who, with his five sons, had settled in the Big Sac River valley in the 1830s. [71] The Coble and Claypool families had settled in the area during the 1850s, [72] while the Hagermans and Underwoods came to Walnut Grove in the 1860s and 1870s respectively. [73]

George Leeper, Elderidge's great uncle, had owned a farm north of Walnut Grove and was well known in the area as a progressive general farmer and stockman. [74] Childless, George apparently extended the support that he would have given to his own children to those of his nieces, nephews and their children, e.g., Elderidge. [75] His association with the project probably accounts for the involvement of J. F. Hagerman and W. W. Underwood, neither of whom lived near Leeper Ford, but apparently were acquainted with George Leeper.

Only a select number of those who lived near the ford or along Degraffenreid Road chose to support the bridge project by co-signing the construction contract. Their number included persons who were long-term residents and familiar with the Leeper family. In summary, the decision to build the bridge at Leeper Road, rather than at another location, seems to have been based on the local support mustered by George and Elderidge Leeper. For the Greene County Court, this support was particularly persuasive, since the bridge supporters/contract co-signers were willing to contribute material, labor, and funds for the bridge construction project, thereby reducing the county's financial obligation.

## II. THE BRIDGE

### A. Description

The Leeper Ford Bridge is a single span Pratt high through truss. The six-panel pin-connected structure has diagonal members in tension and vertical members in compression, except for the hip vertical eyebars, 1-inch square, in tension adjacent to the inclined end posts. The bridge is 110.0 feet long, 13.1 feet wide (curb to curb), and 12.0 feet high (vertical clearance over deck). Metal rods, 7/8 inch in diameter, and eyebars, 2 inches wide by 1/2 inch thick, are used for the vertical and diagonal tension members. Rods, 1-3/4-inch in diameter with turnbuckles, are used for the top and bottom lateral X-bracing. The vertical compression members at the panel points each consist of a pair of 6-inch tall rolled channels held 6 inches apart by diagonal lacing straps, 12-1/2 inches long by 1-3/4 inches wide by 1/4 inch thick, riveted to the flanges of the channels at 14 inches on centers. The words "Phoenix Iron CO" and "Philada PA" are periodically stamped along the webs of the channels.

The top chords and inclined end posts consist of pairs of channels 9 inches tall, held 9-1/2 inches apart by lacing straps. The channels themselves are built-up members with the flanges each being a continuous 2-1/2-inch by 2-inch by 1/4-inch angle, riveted at 5 inches on center to the top and bottom



edge of a continuous plate, 9 inches wide and 1/4-inch thick, which serves as the channel web. The diagonal lacing straps, 19 inches long by 2 inches wide by 1/4-inch thick, are riveted to the channels' flanges at 20 inches on centers. The bridge portals are laced with a pair of continuous angles along the top and bottom. The bridge has no metal ornamentation or nameplates. The horizontal cross members between the three interior top chord panel points each consist of a pair of 2-1/2-inch by 2-inch by 1/4-inch angles along the top and bottom and are held 6 inches apart by diagonal lacing straps. The bottom chords are pairs of eyebars, 2-inches wide by 7/8-inch thick, pinned to the bottom of the vertical compression members.

The transverse floor beams occur at the five interior bottom chord panel points and are bolted to the bottom of the compression verticals. The transverse floor beams are built-up plate girders, consisting of a pair of continuous steel angles along the top and bottom riveted to the web plate, which is 20 inches tall. The floor longitudinal stringer beams are rolled steel I-beams, 6 inches tall, spaced at 27 inches on centers. The longitudinal stringers along each side of the deck are rolled channels 6 inches tall. The longitudinal floor stringers bear on top of the transverse floor beams.

The bridge deck is made of rough sawn timber planks, approximately 3 inches thick by 12 inches wide. They are laid from curb to curb on their broader sides. The deck planks are nailed to wood stringers, 3 inches thick by 6 inches wide, which are bolted to the sides of the longitudinal stringers beams. The continuous side curbs are wooden members, 3 inches thick by 6 inches wide, that are periodically bolted to the deck planks. The guard rails along the bridge length are continuous 2-1/2-inch by 2-1/2-inch by 1/4-inch angles at heights of 15 inches, 30 inches and 43 inches above the deck.

The truss is set upon cast-in-place concrete abutments. At each corner of the bridge, the upper and lower chords meet at a pin connection. Each bearing pin, 3-inches in diameter, is supported by a bearing plate assembly, which is bolted to the top of the abutments.

#### B. Modifications

Once built, the Leeper Ford Bridge was subject to periodic maintenance. This included painting and deck replacement. Ambiguous court records preclude determining when much of this work occurred. However, the bridge apparently has not required major repairs, as the metal truss appears to be essentially unaltered.

#### C. Ownership and the Future

The Leeper Ford Bridge is owned by Greene County and has been designated As Bridge No. 533 by the Greene County Highway Department. The Missouri Highway and Transportation Department has adopted this number in their county bridge inventory. The bridge has been registered with the Archaeological Survey of Missouri and received the following site number, 23GR699. The bridge is on Greene County Farm Road 34, three miles south of the Greene/Polk County line and two miles west of Missouri State Route V.

A structural appraisal of the bridge revealed that it is structurally deficient and functionally obsolete to carry modern vehicular traffic. The width of 13 feet provides only one driving lane, and the posted five ton legal load limits the traffic to cars and light trucks. It has suffered collision damage, with some of the vertical compression members bent as a result. Most of the metal components show signs

of rusting, pitting and general deterioration. The concrete abutments are cracking and spalling, and the wooden members are deteriorating. The east approach grade is very steep at 13 percent slope, which severely limits sight distance and is extremely hazardous when slick. Because of its condition and the inadequate level of service it provides, a decision was made to replace the structure. the proposed alignment of the replacement structure is essentially on the same alignment and location of the existing bridge, which requires that the Leeper Ford Bridge be removed.

The availability of the Leeper Ford Bridge will be advertised prior to removal of the structure. The bridge will be made available to parties willing to assume ownership and responsibility of relocating and reconstructing it for use in a capacity compatible with its historic nature. If a responsibility party who will take possession of the Leeper Ford Bridge cannot be found, it will be demolished at the initiation of the construction of the proposed replacement structure, tentatively scheduled for summer 1990.

### III. BIOGRAPHICAL MATERIAL

#### A. Ed. W. Appleby and the Pioneer Construction Company

Ed Appleby was familiar with Greene County and well-connected, being not only a native of the area and was associated with a large and prominent family from Ash Grove, but he was also the son of Albert B. Appleby, a former presiding judge of the Greene County Court (1890-1898).

Rather than follow the traditional family occupations of farming and stock breeding, Appleby chose to enter business. He attended business college in Springfield and worked as a bookkeeper for the Springfield Traction Company. [77] Greene County Court records suggest that he became involved in road and bridge construction during this period. By 1903, he was the Canton Bridge Company's county contracting agent and worked for Joseph W. Hoover, their regional representative, on bridge projects in the area. [78] Although a self-taught engineer, he is credited with mastering concrete construction, which may account for Greene County's early use of concrete bridges. [79]

Appleby joined the Pioneer Construction Company shortly after its formation in 1918 as a bridge builder and secretary of the corporation. [80] This privately-owned, Missouri-based firm was headquartered in Kansas City. [81] Its diverse operations included survey, design, and construction of roads, highways, and bridges, as well as buying and selling building materials. The majority stockholder and president throughout the firm's operation was Fred R. Hoover. [82] Hoover's father, Joseph W. Hoover, had served as general western agent for the Wrought Iron Bridge Company (1884-1900), American Bridge Company (1900-1902), Canton Bridge Company (1902-1909), as well as heading his own firm, the Kansas City Bridge Company (1893-1921. [83] If his record in Greene and Christian counties is representative, J. W. Hoover was an eminently successful engineer and businessman; for the firms he represented built almost all of the metal bridges erected in the two counties between 1885 and 1920. [84] While Fred Hoover apparently secured his father's "good will" for the company, adding Appleby to the firm insured a favorable climate for the company's business in the area. Through Appleby's efforts, Pioneer Construction Company was the major bridge builder and supplier of materials for Greene and Christian counties during the 1920s. [85]

V. ENDNOTES

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5. Lynn Morrow and David Quick, Galena 'Y' Bridge, 13.
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21. Lynn Morrow and David Quick, Galena "Y" Bridge, 3.
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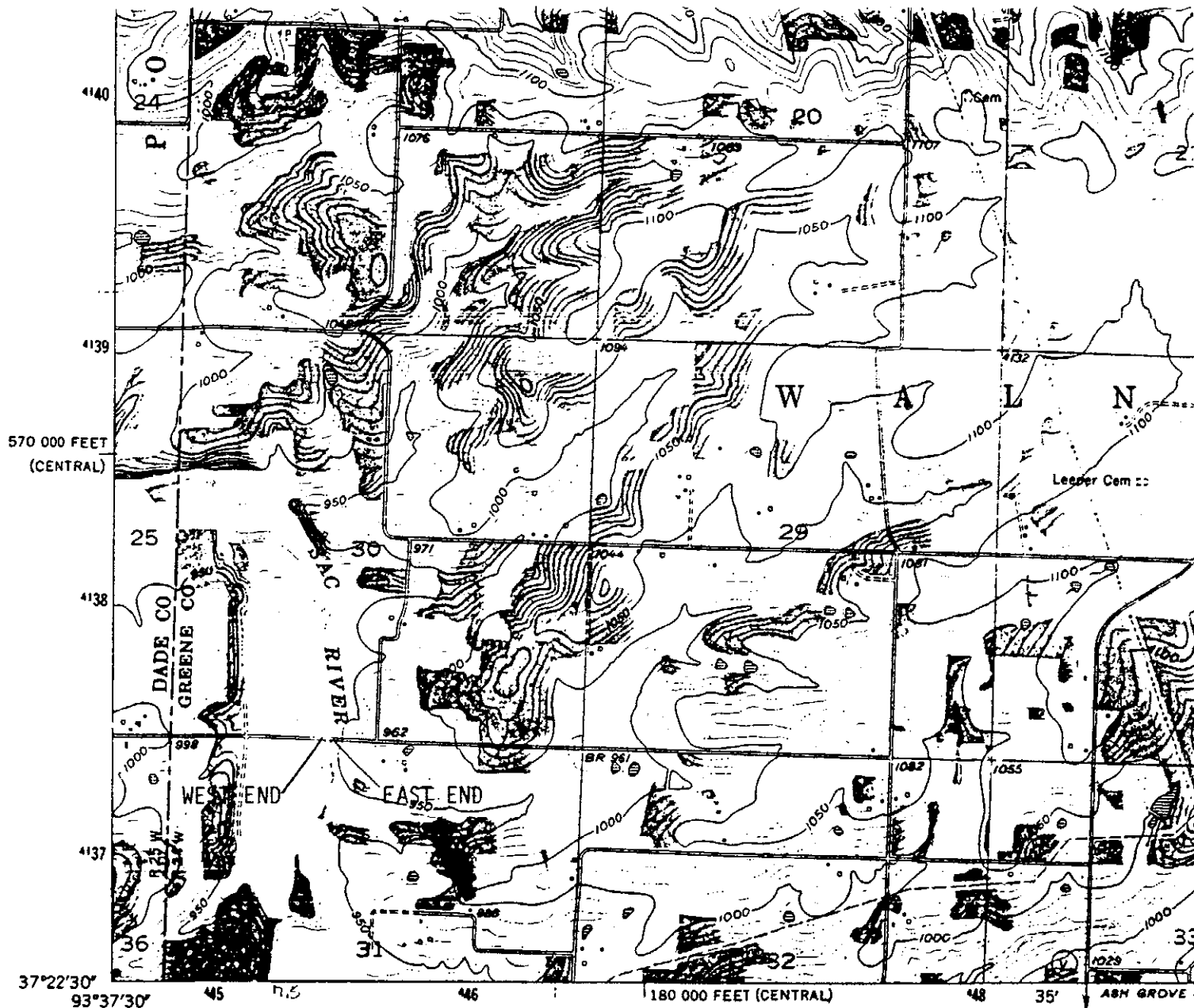
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WALNUT GROVE QUAD  
MISSOURI  
7.5 MINUTE SERIES (TOPO)

Leeper Ford Bridge  
HAER No. MO-62  
(Page 17)

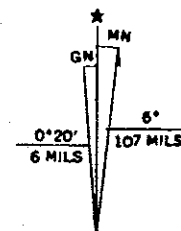


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Topography from aerial photographs by multiplex methods  
Aerial photographs taken 1950. Field check 1956

Polyconic projection. 1927 North American datum  
10,000-foot grids based on Missouri coordinate system,  
central and west zones  
1000-metre Universal Transverse Mercator grid ticks,  
zone 15, shown in blue  
Boundaries shown in purple compiled from aerial photographs



UTM GRID AND 1975 MAGNETIC NORTH  
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